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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--|-------------|----------------------|-----------------------------|------------------------|
| 10/657,059 | 08/13/2004 | Hongli Williman | 1774-RE | 1608 |
| 35157 7590 05/14/2007 NATIONAL STARCH AND CHEMICAL COMPANY P.O. BOX 6500 BRIDGEWATER, NJ 08807-3300 | | | EXAMINER ASINOVSKY, OLGA | |
| | | | ART UNIT 1711 | PAPER NUMBER |
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

| | | | |
|------------------------------|-------------------------------|---------------------------------|--|
| Office Action Summary | Application No. 10/657,059 | Applicant(s) WILLIMAN ET AL. | |
| | Examiner Olga Asinovsky | Art Unit 1711 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 September 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 20-33 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 20-33 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☒ Certified copies of the priority documents have been received in Application No. 09/744,089.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>09/05/03</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Reissue Applications

1. The reissue oath/declaration filed with this application is defective because it fails to contain the statement required under 37 CFR 1.175(a)(1) as to applicant's belief that the original patent is wholly or partly inoperative or invalid. See 37 CFR 1.175(a)(1) and see MPEP § 1414.

Applicant does not specify a defect in the declaration. The amendment filed September 05, 2003 cancelling claims 1-19 and file new claims 20-23 do not comply with 37 CFR 1.173(d), which sets forth the manner of making amendments in reissue applications. A supplemental paper correctly amending the reissue application is required.

All amendment changes must be made relative to the patent to be reissued. The matter to be added by reissue must be underlined. Each new claim that is newly presented in the reissue application should be presented with underlining throughout the claim. All added claims should have an explanation of the support in the disclosure of the patent for the changes made to the claims as required by 37 CFR 1.173(c).

The claimed invention is a process for producing aqueous dispersions of copolymers comprising: polymerizing olefinically unsaturated (co)monomers, in which at least one (co)monomer has cationic functionality, to form a polymer with cationic functionality, and, adding additional (co)monomers and polymerizing the resulting mixture; wherein

the process is effectively controlled to produce (co)polymer particles with heterogeneous morphology and wherein the outer phase of the particles has a Tg of more than about 50 C.

Claim Rejections - 35 USC § 112

1. Claim 20 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The presence of a polymerizable monomer having cationic functionality is not clearly set being present in the inner phase.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 20-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Overbeek et al U.S. Patent 5,981,642.

4. The claimed invention is a process for producing an aqueous dispersion of copolymer having a hydrophilic inner phase and a hydrophobic outer phase. The copolymer also comprises at least one polymerizable (co)monomer having a cationic functionality. The presence of said (co)monomer having cationic functionality could be in hydrophilic phase or hydrophobic phase.

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Overbeek discloses a method of grafting a water-soluble organic oligomer(s) to organic polymer latex, wherein latex is preferably hydrophobic latex polymer. The polymerizable monomer(s) for producing an olefinic water-soluble oligomer includes (meth)acrylic acid, carboxylic acid esters, and can include methyl methacrylate and styrene monomers, col. 8, line 42 through col. 9, line 65. The latex polymer is preferably hydrophobic, col. 14, line 35. The latex can be produced by seed polymerization and the obtained particles have core/shell morphology, col. 14, lines 52-57. The polymerizable olefinically unsaturated monomers for producing a latex polymer include alkyl (meth)acrylate, epoxy functional (meth)acrylate (col. 14, lines 33-67), amino-functional monomers such as t-butylamino ethyl methacrylate and dimethylamino ethyl methacrylate, col. 15, lines 9-13. The amino-functional monomers are readable for being a cationically functional monomer in the present claims. The Tg of the latex polymer may vary in the range from (-50 C) to 150 C, depending upon the intended application, col. 15, lines 64-66. The oligomer and/or latex polymer may optionally contain polyisocyanate, col. 17, lines 3-7, 16 and 35-37. The presence of polyisocyanate is also readable for having a cationic functional group for the present claims. The resulting composition is an aqueous composition for coating purposes, col. 18, lines 24-58. A method of grafting a water-soluble organic oligomer to polymer latex is readable in the present claims for producing a core/shell copolymer structure. The pH degree of the aqueous polymer latex composition in Overbeek invention can be controlled by quaternary ammonium cation or Na⁺, Li⁺ and K⁺, column 4, lines 13-31.

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Reference discloses an aqueous composition that is readable in the term of being an “aqueous dispersion” since the aqueous composition is not water-soluble composition.

The difference is that Overbeek does not disclose the outer phase having a Tg of more than about 50 C. It would have been obvious to one of ordinary skill in the art to consider that the monomers for producing a grafted oligomer can be selected including methylmethacrylate and/or styrene monomers together with an aqueous-dispersed polyisocyanate for producing the outer phase having a Tg of more than about 50 C, because these monomers are readable for making an outer phase in the aqueous coating composition in Overbeek invention, and since the outer phase having higher Tg is depending on the desired application.

Overbeek does not disclose or use the term “redispersible powder” for the present claim 31. However, it would have been obvious to one of ordinary skill in the art to consider that the aqueous composition in Overbeek would have “redispersible” property upon removing water and drying said composition, because the claimed aqueous dispersion of the composition may be differently worded but having the same meaning in the aqueous composition having core/shell particles in Overbeek invention.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

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(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 20-33 are rejected under 35 U.S.C. 102(b) as being anticipated by Maslanka et al U.S. Patent 4,483,959.

Maslanka discloses a process for preparing a latex of graft copolymer particles comprising water-soluble cationic prepolymer and grafted polymerizable ethylenically unsaturated monomer(s), column 9, lines 28-45. The water-soluble cationic prepolymer formed from cationic monomer represented by formula (I), column 2, line 40 is readable in the present claims 20 and 28. The water-soluble cationic prepolymer can be any of a variety of polymer represented by formulae (I), (II), (III), (IV), (V), (VI), column 5, line 6 through column 7. The cationic prepolymer is readable for being a seed polymer in the present claim 21. The polymerizable monoethylenically unsaturated monomers at column 4, lines 39-68 are readable for being a hydrophobic outer phase having a $T_g > 50^\circ\text{C}$, column 4, line 66. The final product is a stable suspension of essentially spherical graft copolymer particles in water having a particle size in the range of about 0.1 micron, column 9, lines 49-53, for the present claim 26. It is possible to dry the latex to a fine powder and said powder can be redispersed in water, column 9, lines 43-44, for the present claims 31-32. Maslanka discloses that drying is possible when the graft copolymer particles have no reactive functionality, column 9, lines 46-48, for the present claims 31-32. Therefore, it is possible to eliminate reactive functionality (depending on the desired application) on the surface of the graft copolymer particle for improving drying process, column 8, lines 44-49. Also, Maslanka discloses that the resulting

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water-insoluble graft copolymer particle can be crosslinked, column 25, line 62. A mixture of said redispersible powder with other powder of homopolymer or copolymer formed from polymerizable monomer such as vinyl acetate, ethylene, vinyl versatate, methacrylate, styrene and butadiene in the present claim 33 would be expected in Maslanka invention as a polymer powder filler to improve physical properties of the resulting latex composition. The claimed invention is fully anticipated by the disclosure in Maslanka invention.

The examiner notes that there is no drawing in the present application.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. References have been considered.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Olga Asinovsky whose telephone number is 571-272-1066. The examiner can normally be reached on 9:00 to 5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James Seidleck can be reached on 571-272-1078. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.


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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

O.A

October 16, 2006
May 09, 2007

Olga Asinovsky
Examiner
Art Unit 1711


James J. Seidleck
Supervisory Patent Examiner
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